

State of Wisconsin/Department of Transportation
RESEARCH PROGRESS REPORT FOR THE QUARTER ENDING: September 30, 2005

Program: SPR-0010(36) FFY99	Part: II Research and Development
Project Title: Reducing Shrinkage Cracking of Structural Concrete Through the Use of Admixtures	Project ID: 0092-04-13
Administrative Contact: Nina McLawhorn	Sponsor: WHRP
WisDOT Technical Contact: Ed Fitzgerald	Approved Starting Date: Oct. 31, 2003
Approved by COR/Steering Committee: \$115,496	Approved Ending Date: Oct. 31, 2005
Project Investigator (agency & contact): Tarun R. Naik, UW-Milwaukee	

Percent Complete: 95%

Project Description: Following are the research objectives:

- 1) Identify potential shrinkage reducing admixtures
- 2) Document capability of each admixture to reduce drying and autogenous shrinkage
- 3) Determine affect of shrinkage reducing admixtures on air-entrained concrete
- 4) Evaluate affects of different aggregate types in concrete containing shrinkage reducing admixtures
- 5) Determine affects of shrinkage reducing admixtures on chloride-ion permeability
- 6) Submit a final report to WHRP that contains all test results and evaluation of the shrinkage reducing admixtures performance
- 7) Develop a specification for each admixture with recommended dosage rate

Progress This Quarter:

(Includes project committee mtgs, work plan status, contract status, significant progress, etc.)

Progress continues for Tasks 2, 2A, 3, 3A, and 4. Additional long-term test results on drying shrinkage, compressive strength, tensile strength, and chloride permeability were collected. Tests for Compressive and tensile strength were completed for Task 3A for mixtures using all three sources of shrinkage reducing admixtures. Chloride-ion permeability testing of the concrete mixtures for Task 3A were also completed.

Mixtures for Task 4, evaluation of the effect of SRA on the stability of air entrainment, were also completed. This task consisted of six mixtures that were evaluated for stability of air in fresh concrete by measuring the air content at 10-minute intervals. Six additional mixtures that were not part of the work plan were added to this task in order to draw more distinct conclusions. The final two mixtures planned for this task were completed during this quarter. Although not specified as part of the original work plan, slump of the fresh concrete was also taken at 10-minute intervals.

Long-term test data continued to be collected, compiled and analyzed for the final report. Test data for comparison of the effectiveness of the shrinkage reducing admixtures from different manufacturers, aggregate types, and effect on chloride ion permeability, air entrainment, aggregate types, air entrainment, dosage requirements,

The writing of the final report was also started during this quarter.

Work Next Quarter:

Continue with long-term testing of concrete mixtures. Finalize report format.

Complete draft of final report and submit to WHRP for comments.

Incorporate WHRP comments, make copies of the final report, and submit to WHRP.



Circumstances Affecting Progress/Budget:

None

Gantt Chart:

PROJECT SCHEDULE

Tasks	2003		2004										2005														
	Q2		Q3			Q4			Q1				Q2			Q3			Q4			Q1		Q2			
	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O			
Task 1: Literature Review	[Planned activity start/stop and duration]		[Actual project progress]																								
Task 2: Admixture Performance for Drying and Autogenous Shrinkage			[Planned activity start/stop and duration]																								
Task 3: Laboratory Evaluation of Effect of Aggregate Source on Shrinkage													[Planned activity start/stop and duration]														
Task 3A: Laboratory Evaluation of Dolomite on Shrinkage													[Planned activity start/stop and duration]														
Task 4: Laboratory Evaluation of SRA Effect on Air-Entrained Concrete													[Planned activity start/stop and duration]														
Task 5: Evaluation of Test Results			[Planned activity start/stop and duration]																								
Task 6: Specification Development													[Planned activity start/stop and duration]														
Task 7: Reports			[Planned activity start/stop and duration]																								

 Planned activity start/stop and duration
 Actual project progress

Note: Gantt chart shown in State Fiscal Year Quarters